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U1S S1820 S1844

(56) Documents cited  
GB 2159570 A GB 2051940 A GB 2008181 A  
GB 0777489 A US 3696646 A

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(54) Security apparatus

(57) Security apparatus 14 for locking a wheel 10 on a hub 12. The apparatus comprising a pin 18 having a head 22 and shaft 26 with a plurality of circumferential grooves 24 on the shaft 26. The pin 18 is engagable through aligned holes in the wheel 10 and hub 12 and lockable therein by a locking member 20 engagable with the grooves 24. The member 20 comprises a body 28 with a cylindrical through passage to accept the free end of the pin 18 and a lock barrel with projections 36 engagable in the grooves 24.

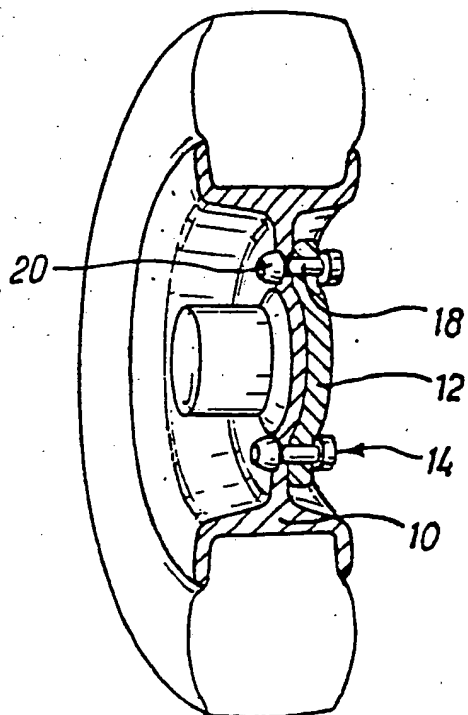


Fig. 2

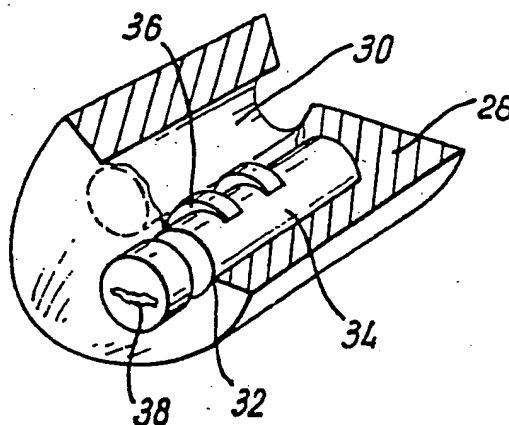


Fig. 4

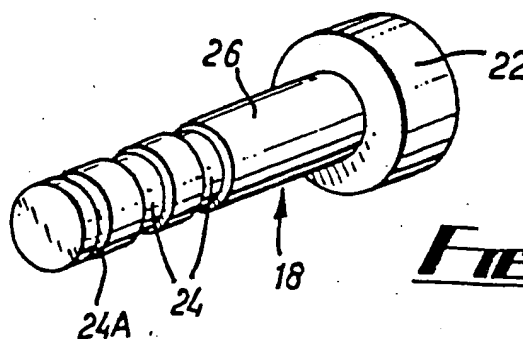
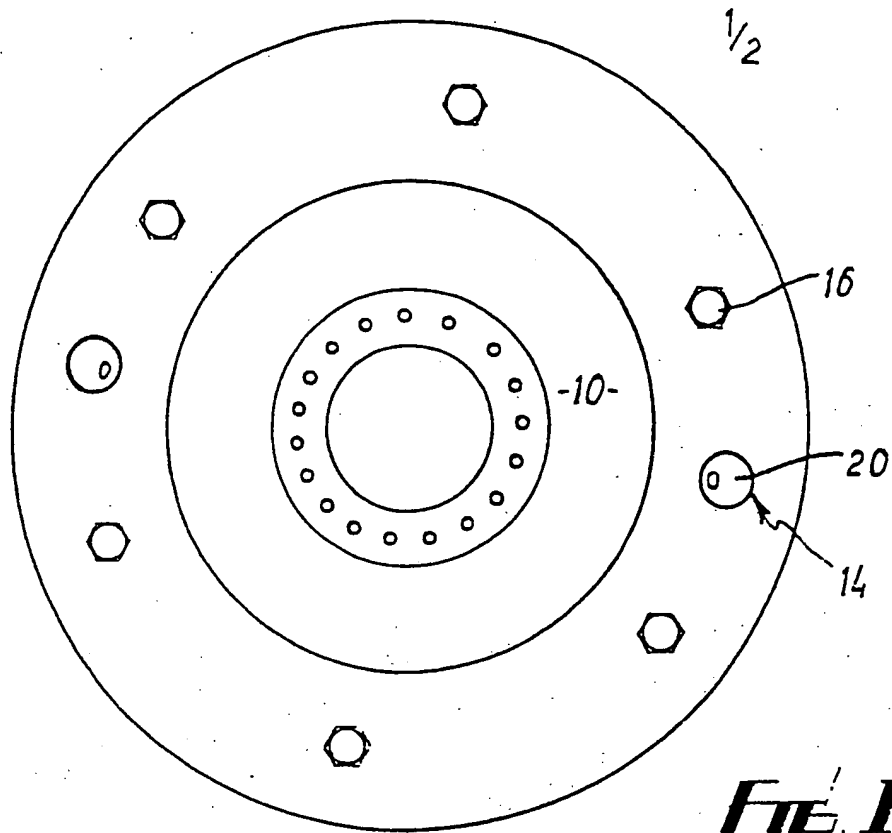


Fig. 3

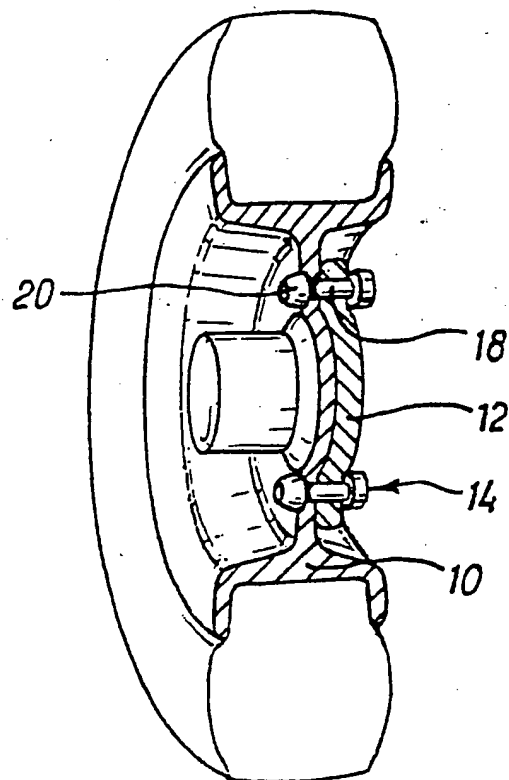
At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

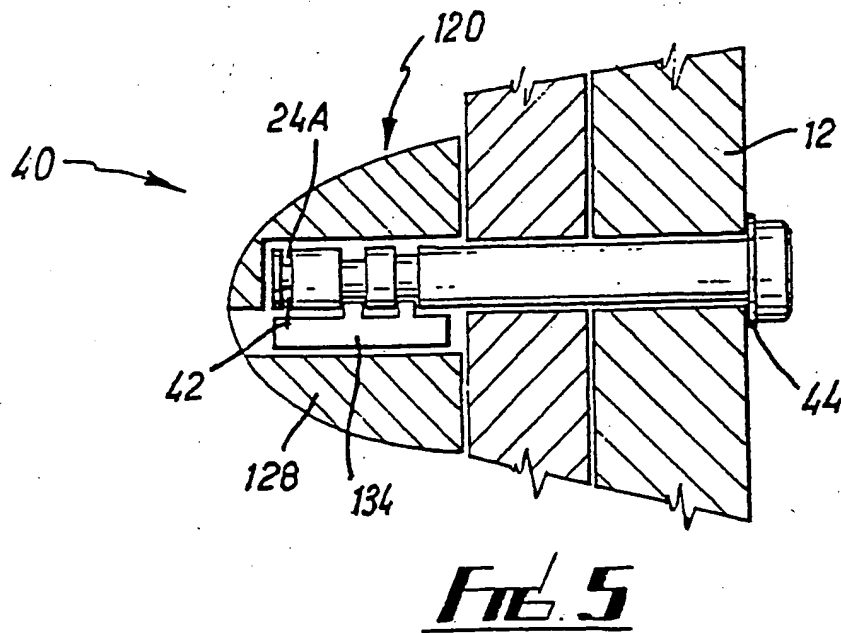
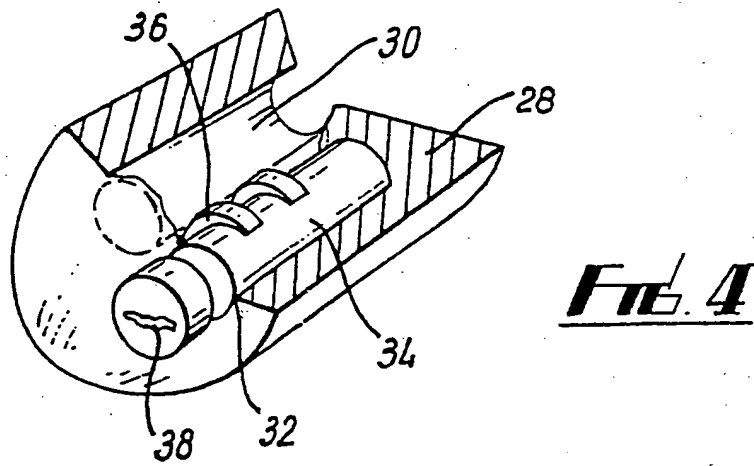
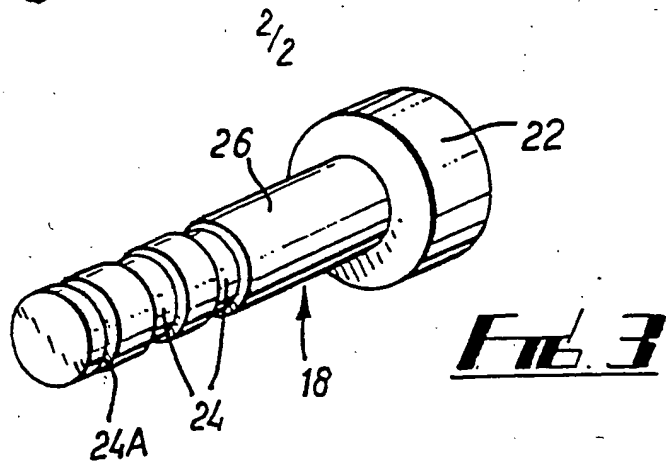
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**FIG. 1**



**FIG. 2**



## Security Apparatus

This invention concerns security apparatus and particularly but not exclusively security apparatus for securing wheels to wheel hubs and especially wheels for lorries and lorry trailers.

In recent years a growing number of thefts of lorry wheels and tyres have occurred from parked lorries and trailers. Modern lorries often have a relatively large number of wheels which, especially if made of aluminium, in combination with the tyres are worth a considerable amount of money.

According to the present invention there is provided security apparatus comprising a first member engagable through aligned holes in a wheel and hub, and a second member lockably engagable upon an end of the first member to lock the wheel to the hub.

The first member preferably comprises a pin with a head which is desirably locatable adjacent the hub with the second member located adjacent the wheel.

The pin, and second member when locked thereon, are preferably freely rotatable in said holes.

The locking engagement of the second member is

preferably key operated and means may be provided such that when an article larger than the key is inserted in the respective part of the second member said member will permanently lock onto the pin. Grooves may be provided on the pin in which the second member lockably engages.

The exterior of the second member and/or head of the pin may be rounded, and is desirably domed.

A plurality of security apparatus may be provided for each wheel and hub, and these are desirably equally spaced around the hub.

The present invention also provides a method of securing a wheel to a hub, the method comprising providing aligned holes in the wheel and hub and locking therein security apparatus according to any of the preceding six paragraphs.

Embodiments of the present invention will now be described by way of example only with reference to the accompanying drawings, in which:-

Fig.1. is a plan view of a wheel and hub fitted with locking apparatus according to the invention;

Fig.2. is a diagrammatic cross sectional view of the wheel and hub of fig.1 with a tyre fitted on the wheel;

Fig.3. is a diagrammatic perspective view of part of the security apparatus shown in figs. 1 and 2;

Fig.4. is a partially cut away perspective view of a further part of the security apparatus shown in figs. 1 and 2; and

Fig.5. is a diagrammatic cross sectional side view of a further security apparatus according to the invention.

Figs.1 and 2 show a wheel 10 mounted on a hub 12 with two security apparatus 14 locking the wheel 10 to the hub 12. The apparatus 14 are provided on a common circle with the wheel nuts 16 and are located diametrically opposite each other. The apparatus 14 comprises a pin 18 and locking member 20.

The pin 18 has a head 22 and three circumferential grooves 24 provided on the shaft 26 of the pin. One of the grooves 24A is located adjacent the free end of the

shaft 26 and is deeper than the other two grooves 24.

The locking member 20 ( Fig. 4) comprises a body 28 with a cylindrical passage 30 extending from one end and of a size to slidably accept the pin 18. A further passage 32 extends from the other end of the body 28 and communicates with the passage 30. The further passage 32 slidably locates a lock barrel 34 which includes a pair of projections 36 engagable in the grooves 24 of the pin 18. The barrel 34 is operable by a key (not shown) through a key hole 38 at its free end. A finger (not shown) is located towards the free end of the barrel 34 which is movable outwardly of the barrel 34 upon an article entering the hole 38 of a greater size than the key. The finger is permanently engagable with the groove 24A on the pin 18 .

Fig. 5 shows a similar security apparatus 40 but with a different locking member 120 in which the lock barrel 134 is located wholly within the body 128. In this figure the finger 42 engagable in the groove 24A can be seen. The body 128 is domed. A dust cap (not shown) may be provided to cover the body 128 to prevent dirt entering and an O ring 44 is provided between the pin head 22 and



the hub 12 again to prevent dirt entering the body 128.

There is thus described security apparatus for locking a wheel to a hub thereby preventing, or at least severly hindering, a person wishing to steal the wheel. The doming of the body and the round head provided on the pin means make it difficult for a tool to get a firm grip on the apparatus. Further, these shapes will tend to deflect any blows from a hammer or other implement. This apparatus is intended particularly for lorries or lorry trailers. To steal the wheels from a lorry or trailer it would be necessary to remove a lock of this type from each wheel, if this can in fact even be achieved, and thus stealing wheels from a lorry or trailer with these fitted would not be an attractive prospect to a thief. Further the provision of the permanently locking finger will prevent a person from removing the apparatus by forcing the lock with a tool such as a screwdriver.

Various modifications may be made without departing from the scope of the invention. For example, the exterior of the locking member and pin may have different

shapes and the pin head may also be domed. A different type of lock could be provided within the locking member.

With vehicles with brake drums directly behind the hub a plate or other component may be required to prevent the pin from dropping into the brake drum upon removal of the wheel.

Claims

1. Security apparatus comprising a first member engagable through aligned holes in a wheel and hub, and a second member lockably engagable upon an end of the first member to lock the wheel to the hub.

2. Apparatus according to claim 1, in which the first member comprises a pin with a head which is locatable adjacent the hub with the second member located adjacent the wheel.

3. Apparatus according to claim 2, in which the pin, and second member when locked thereon, are freely rotatable in said holes.

4. Apparatus according to any of the preceding claims in which the locking engagement of the second member is key operated and means are provided such that when an article larger than the key is inserted in the respective part of the second member said member will permanently lock onto the first member.

5. Apparatus according to any of the preceding claims, in which grooves are provided on the first member in

which the second member lockably engages.

6. Apparatus according to any of claims 2 to 5 when dependent on Claim 2, in which the exterior of the second member and/or head of the pin is rounded.

7. Apparatus according to Claim 6, in which the exterior of the second member and/or head of the pin is domed.

8. A method according to Claim 8, in which a plurality of security apparatus are provided for each wheel and hub.

9. A method of securing a wheel to a hub, the method comprising providing aligned holes in the wheel and hub, and locking therein security apparatus according to any of the preceding claims.

10. A method according to Claim 9, in which a plurality of security apparatus are provided substantially equispaced around the hub.

11. Security apparatus substantially as hereinbefore described with reference to the accompanying drawings.

12. A method of securing a wheel to a hub substantially as hereinbefore described with reference to the accompanying drawings.

13. Any novel subject matter or combination including novel subject matter herein disclosed, whether or not within the scope of or relating to the same invention as any of the preceding claims.

**E. Examiner's report to the Comptroller under  
Section 17 (The Search report)**

9021595.5

**Relevant Technical fields**

- (i) UK CI (Edition <sup>4</sup>) E2A
- (ii) Int CI (Edition <sup>5</sup>) E05B

**Search Examiner**

P J SILVIE

**Databases (see over)**

- (i) UK Patent Office
- (ii)

**Date of Search**

28 FEBRUARY 1991

Documents considered relevant following a search in respect of claims

1-10

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X Y	GB 2 159 570 A (MARTIN)	1-5 9
X Y	GB 2 051 940 A (YARDENI)	1-5 9
X Y	GB 2 008 181 A (CLOVIS)	1-5 9
X Y	GB 0 777 489 A (LORD)	1-5 9
X	US 3 696 646 A (LOSCALZO)	1-5, 9

CO6ABR

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